**Iraq Multi Donor Trust Fund - ITF**

**ANNUAL PROGRAMME[1] NARRATIVE PROGRESS REPORT**
**OPERATIONALLY CLOSED**
**REPORTING PERIOD: 1 JANUARY – 31 DECEMBER 2009**

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| ***Submitted by:***<br>WHO Iraq<br>wriraq@irq.emro.who.int | ***Country and Thematic Area[2]***<br>*ITF Iraq*<br>Health and Nutrition Sector Outcome Team |
| ***Programme No:* 66895**<br>***MDTF Office Atlas No:* 54895**<br>***Programme Title:* D2 -15 Strengthening Medical Equipment Management and Maintenance System across Iraq.** | ***Participating Organization(s):***<br>***WHO*** |
| ***Implementing Partners:***<br>The main counterpart is Ministry of Health and relevant Departments of Health. | ***Programme Budget (from the Fund):***<br>US$ 1,718,281 |

***Programme Duration (in months):***
Start date[3]: The project started on 28 Dec 2006 with an expected duration of 9 months implementation period.
End date:

- *Original end date:* 28 September 2008
- *Revised end date:* 28 March 2009.
- The project was extended three times:
  1) An automatic six month extension up to 28 March 2008 – approval date: 11/09/2007.
  2) 2nd extension of six month till 28 Sep 08 – approval date: 17/03/2008.
  3) 3rd extension of six month till 28 March 09 – approval date: 28/08/2008.

Operational Closure: 28 March 2009

[1] The term "programme" is used for programmes, joint programmes and projects.
[2] E.g. Priority Area for the Peacebuilding Fund; Thematic Window for the Millennium Development Goals Fund (MDG-F); etc.
[3] The start date is the date of the first transfer of funds from the MDTF Office as Administrative Agent.

# NARRATIVE REPORT FORMAT

## I. Purpose

The goal of this project is to improve and strengthen the quality of health care services through optimization of the Medical Equipment Management and Maintenance System across Iraq.

This project is targeting four Governorates with the following main objectives in view:

1- Strengthened capacity of facilities and staff at the Biomedical Equipment Sections/units at Baghdad Central Maintenance Repair Shop (Kimadia) and DOHs of Rasafa, Karkh, Basra, Ninewah, and Erbil.
2- Improved capacity of health care technology personnel by 80% by the end of the implementation period.
3- Strengthened Medical Equipment Management System by 90%.
4- Launched a sustainable operational strategy.

**Outcomes:** The expected outcomes of the project are:

1.1- Completed assessment and inventory of the targeted medical equipment repair shops.
1.2- Restored services of the medical equipment repair shops by 100% by rehabilitating the repair shop building and providing biomedical test instruments (hardware and software) to ensure adequate and appropriate usage and functionality, quality and safety of existing medical equipment at Health institutions.
2.1- Improved and enhanced skills of medical equipment personnel by 80% through attending international conferences, training courses as well as national training and TOT courses.
3.1- Supported operational guidelines and policy development in addition to establishment of monitoring and medical equipment management information system.
4.1- Finalized an overall operational strategy to ensure continuity, ways and means to improve and support the rest of the medical equipment repair departments/units at the various DOH.

**Outputs:** The expected outputs of the project are:

1.1.1 Worked out a classification scheme to carry out needs assessments about the functional status of the medical equipment repair shops/units.
1.1.2 Designed a database for managing current inventory and aiding managers in their maintenance, repair and/or procurement decisions. This also includes the recruitment of Data entry and IT personnel to update and maintain the database.
1.2.1 Assessed status of medical equipment repair shops including staffing, test equipment, training and rehabilitation needs, and availability of needed spare parts.
1.2.2 Completed physical rehabilitation of medical equipment repair shops/units and furnished with tools, test equipment, and accessories needed for proper operation.
1.2.3 Supported the biomedical equipment repair shops/units in:

- Operating according to basic procedures and guidelines.
- Assessing gaps in human resources technical skills and developing training needs.
- Providing mobile maintenance repair shops to support the repair and maintenance services to health facilities in districts and areas far from the centre.

2.1.1 Providing training for 220 health care technology personnel (males and females), through in-country training programmes on proper maintenance, management and planning capacity. Consequently, a series of Training of trainers (TOT) workshops can be organized to share the acquired knowledge.
2.1.2 Providing international training for 15 health care technology supervisors and engineers (11

males and 4 females) by attending international conferences and workshops on proper maintenance and utilization of medical equipment.

2.1.3 Procuring teaching and decision support tools (software and hardware) in order to:

- Facilitate the transfer of knowledge on usage, maintenance and repair of equipment.
- Support managers in needs assessment, procurement decisions, specifications, cost-effective measurements, etc.

3.1.1 Established a Medical Equipment Management Policy committee comprising DoH representatives and supported by WHO international consultants. The committee should be delegated the special authority to carry out the following responsibilities:

- Ensuring medical equipment plan is properly reviewed and revised as necessary.
- Ensuring proper implementation of the plan.
- Ensuring that appropriate performance standards are established and maintained.
- Ensuring that users are aware of their responsibilities for implementation.

3.1.2 Initiated plans and policies needed for project implementation; such as identification of counterparts and management arrangements, including the supervision and monitoring.

3.1.3 Initiated and designed a Medical equipment Management Information System.

3.1.4 Systematized operational plan of action upon the projection of needs (financial, human resources, managerial, operational, and material).

**Strategic (UN) Planning Framework**

This project is in line with the UN Assistance Strategy to Iraq and the UN Health and Nutrition Sector matrix, as it addresses the outcome related to restoring health care services and enhancing the quality and sustainability of health interventions by strengthening the Medical Equipment Management and Maintenance System as an integral part of public health policy.

Functional medical equipment repair shops are the key to ascertain that quality of health care services are improved and strengthened, through optimization of the Medical Equipment Management and Maintenance (MEM&MS) system across Iraq. The project is expected to contribute indirectly to enhancing the *Medical Equipment Management and Maintenance System* at all medical equipment repair shops at the DOH level through sharing of information and experience, international and in-country training, TOT workshops, provision of informatics and setting up guidelines and policies.

Moreover, the present project had been designed to make the health system more effective and efficient by limiting the waste of already inadequate resources.

This program also has a human rights component, whereby the realization of human rights is fundamental for the achieving of the MDGs. It encompasses the following rights:

1. The right to a healthy environment
2. The right to health
3. The right to efficient health technology
4. The right to access quality care
5. The right to access technical competence
6. Access to healthy education

On the other hand, the implementation of this project will contribute to addressing the following MDGs and Iraq's National Development Goals stipulated in the National Development Strategy (NDS): (a) Reduce child mortality (MDG 4 and Goal 4 of Iraq National Development Strategy-NDS), (b) Improve maternal health (MDG 5 and Goal 5 of the NDS),

and (c) Combat HIV/AIDS, malaria, and other diseases (MDG 6 and Goal 6 of the NDS) through the provision of resources, training, and support to biomedical equipment workshops.

In addition, functional biomedical equipment repair shops will be an advantageous tool contributing to the needs of Iraqi population in general, of those living in the targeted DOH, and of the poor and vulnerable groups who cannot afford paying for health services in the private sector.

## II. Resources

*Financial Resources:*

Situation as of 31/12/2009

| | | | |
|---|---|---|---|
| Funds Committed | $1,704,436 | % of approved | 99.2% |
| Funds Disbursed | $1,699,154 | % of approved | 98.9% |
| Final date | 28 March 2009 (project operationally closed) | | |

*Human Resources:*

**National Staff:** For the implementation of the various project components, one biomedical engineer, one biomedical application specialist, five site engineers, one data management specialist, one data entry and one logistic assistant have been supporting the implementation of the project. On the other hand, WHO network of national focal points has actively participated in the implementation process in close coordination and collaboration with stakeholders.

**International Staff:** One international biomedical engineer based in WHO Iraq is managing and coordinating the project throughout the entire implementation period. It's worth mentioning that other WHO international staff at both Country and Regional office; have been providing technical support in the area of medical devices standards and physical rehabilitation component.

## III. Implementation and Monitoring Arrangements

The project is being lead by a Project Steering Committee (PSC) at the central level for coordination and harmonization purposes in addition to Task Force Committees of representation of medical equipment repair sections in each of the 5 targeted DoHs. This mechanism has ensured optimal communication and collaboration between all partners and stakeholders and facilitates consensus.

Moreover, the coordination between all counterparts is essential in streamlining implementation, however since the technical, logistical and operational support are provided by WHO then each medical equipment repair section can function as an entity alone and the PSC and WHO will be the connecting factor between all counterparts.

WHO has coordinated and monitored the implementation of the whole programme and provided technical and managerial support to PSC assisted by nationals inside Iraq (engineers and support staff/logistics and administration).

In addition, WHO's focal points in the MoH and DoH who facilitate the coordination and communication between all stakeholders have effectively supported the project implementation. Furthermore, the Biomedical Engineering Unit expertise based in WHO's Regional Office in Cairo had a valuable input for development of policies and standards.

In addition, the video conferencing capacity at WHO Iraq Office in Amman has facilitated the coordination and management given the security situation and assisted in continuously liaising with national staff on the ground.

The physical rehabilitation of the medical equipment repair shops have been implemented by local private contractors and been implemented according to Memorandum of Understanding between WHO and MOH. The use of local contractors to carry out the physical rehabilitation works is a mechanism which has proved to be successful considering the current deteriorated security situation. Indeed, the deep knowledge and awareness of local contractors regarding the security environment on the ground has increased the possibilities in adapting quickly to the changing and volatile environment.

**Procurement procedures utilized and variances in standard procedures.**

The procurement component and provision of biomedical test instruments, tools, mobile vehicle (customized maintenance repair shop), transportation facilities, informatics, furniture etc has been done according to WHO rules and regulations.

In order to establish the needs of the medical equipment repair shops and identify the gaps, a needs assessment was carried out for these repair shops in Baghdad, Basra, Erbil and Ninewah. Consultations between WHO and the PSC were held to agree on the final requirements. Bill of quantities with detailed generic technical specifications for the agreed items was prepared with a cost break down. Finally, the approved list of requirements was processed by WHO Regional office, whereupon WHO procedures for tendering and contract awarding were applied to the purchasing and delivery of equipment and supplies.

Furthermore, organization manuals providing strict guidance and procedures on invitation to bids, bids opening, bids analysis, bids review and contract award, including conditions abiding both parties (the successful bidder and the organization) are available for international and local procurement. There are specific committees at each stage of the bidding process.

**Monitoring system and lessons learned**

WHO and the PSC are maintaining regular communications to evaluate the implementing process and impact of the project, and to identify constraints and solutions in order to ensure a flexibly efficient approach. The project is monitored by WHO office based in Amman and assisted by WHO sub-offices inside Iraq in Baghdad, Basra, Erbil and Ninewah. WHO national staff are coordinating with targeted DOH to prepare and forward periodic reports to Amman for proper monitoring and evaluation.

Financial tracking is according to WHO rules and regulations in issuing financial statements related to commitment and disbursement during the implementation of the project components. Whereas, at the end of the project, the impact will be assessed by measuring performance-based indicators and compare them to baseline information collected at project implementation.

Holding the stakeholders at all levels accountable in meeting their financial and policy commitments ensure the smooth implementation of the rehabilitation of the building of central repair shops. The concerned stakeholders – in collaboration with WHO Rehabilitation unit – produce the bid document based upon the needs assessment conducted on the facilities (the bid document is used by all bidding Contractors and includes the bill of quantities, drawings and others). The bid announcement is made be by the concerned DOH and Ministry in newspapers and

other communication channels, with support from WHO to ensure that the bid is effectively advertised. Bid opening and analysis is done by MOH/DOH committees and checked and verified by WHO Contract Review Team. Once approval obtained, MOH signs the contract with the winning company and implementation of work starts. Then committees will be appointed by MOH/DOH, to supervise the implementation of work on-site and undertake daily measurements and to follow up and assist the first committee on weekly/fortnightly basis, based upon needs. WHO as well assigns an engineer to be part of the committees for ensuring quality and quantity of items executed.

Completed work is then verified by WHO and MOH/DOH staff and first acceptance certificate will be issued by the MOH committee and maintenance period of 12 months will commence. 5% of executed work will be kept as warranty insurance and will be released upon issue of the final acceptance certificate after one year of the first acceptance certificate. Digital photographs ensure records keeping on projects' progress are used for weekly reporting.

**Assessments, evaluations or studies undertaken:**

Survey of medical devices in 6 hospitals in Iraq (Baghdad (3), Erbil, Basra and Ninewah) has been finalized. The collected data has been verified and reconciled and data was be imported to MS Access database. The elements for this survey were forms, surveyors, briefing surveyors on the scope and data entry.

## IV. Results

1. Improved and enhanced skills of 98 medical equipment personnel through attending international and national training courses[4]. The courses provided the necessary balance: (a) to update the technical skills and abilities of engineers and technicians for operation and maintenance, (b) explain principles of operation of the medical equipment, (c) run a preventive maintenance session, (d) explain schematic diagrams for repair and maintenance, and (e) exchange information and experience.

   Six (6) national training workshops were conducted inside the country to improve practical skills for 78 maintenance and repair personnel in Baghdad and Mosul on biomedical test instruments, ventilator and anesthesia machines, ultrasound machines, general laboratory equipment and renal dialysis.

   WHO organized one-week training course on maintenance of spectrophotometer for two biomedical engineers (1 male and 1 female) in the United Kingdom.

   WHO organized a 1-week field visit for 10 staff to the Directorate of Biomedical Engineering in Jordan. The field visit comes within the framework of the decision of Sixtieth World Health Assembly held in May 23, 2007 on Health Care Technologies, which urges member states to exchange information and expertise on medical devices. The field visit focused on the experience of the Directorate in the following areas:
   - Mechanisms for identifying priorities in the areas of medical equipment needs & distribution of resources.
   - National plans and strategies used in the systems necessary to assess the medical equipment in planning, procurement and management.
   - Computerized management database of medical equipment.

[4] See Annex 1 for data on capacity building

- Training plans and frameworks adopted to raise the efficiency of workers in the field of medical devices.
- Eight (8) biomedical engineering personnel (7 male and 1 female) attended 3-week overseas training courses on Laboratory equipment and medical equipment management in Malaysia.

2. Improved services of targeted biomedical equipment repair shops:
   - Finalized delivery of radiation measurement tools, service tools and test instruments to the central maintenance repair shops.
   - Additionally, the rehabilitated medical equipment repair shops were fully furnished.

3. Supported operational guidelines and revision of medical equipment management policy in addition to establishment of management information system.

   The collected biomedical equipment data of 6 hospitals has been verified and reconciled and data was imported to MS Access database. Decision was made lately to procure management system that is tested and used by biomedical engineering departments in other countries instead of developing new software that will need further testing and improvements.

   Potential suppliers have been identified; nonetheless as the implementation will go beyond the deadline of the project, other sources were identified to support the procurement for two hospitals in Baghdad and Erbil. The system will serve as a management, reporting and monitoring tool on existing hospitals' medical equipment status, maintenance procedures, staff performance & etc.

   This management software is a modular system and will be managing all aspects of medical equipment-based assets found in the healthcare institutions.

**Key outputs achieved in the reporting period**

As a result of the achieved outputs the following products have materialized;

There is broad recognition and understating by MOH senior management for the importance of having a single body managing the biomedical engineering and that the proposed amended public health law to consider the medical equipment management as integral part of public health system.

The large number of individual medical devices in Iraq presents a unique set of problems in management and represents a major role for clinical engineering. Medical devices pose a number of economic and technical challenges to national health system in Iraq. It is recognized that the lack of a unified body responsible for selection, procurement, use and management of medical devices has placed more burdens on all MOH levels from engineering personnel, to users, and operators of medical devices. Consequently the efforts to implement a comprehensive Health Care Technology Management System offer a range of solutions to address these requirements and to improve quality. The project has set a unique milestone in addressing these obstacles and concerns. This has a tangible impact on achieving the objectives:

- Developing a detailed plan of action towards achieving proper management of medical devices. This will support successful implementation and integration of a medical device program into national health system.
- The foundation of the successful engineering program is the establishment of a computerized maintenance and management system. This management software housed information of equipment inventory, work orders, staff performance, stock of spare parts, etc.

- The capacity building provided the necessary balance of principles and theory together with thorough hands-on experience to ensure safety and quality of provided health care services.
- Supported cooperation and consultation among biomedical equipment repair shops in terms of technical consultations and expertise exchange.
- Procured biomedical test instruments and tools have enhanced the capability of medical equipment repair shops to repair and perform preventive maintenance on life saving and general purpose radiographic equipment to ensure it is technically sound
- Supported movement of service teams to carry out repair and maintenance activities through the Governorates and enable services to be provided in a more timely and efficient manner by providing mobile vehicle (customized maintenance repair shop)
- On the long run, the quality and sustainability of health interventions will be enhanced by promoting safe and effective use of medical equipment, establishing criteria for evaluating and tracking biomedical equipment.

**Explain, if relevant, delays in programme implementation, the nature of the constraints, actions taken to mitigate future delays and lessons learned in the process.**

There have been several elements affecting the timely implementation of the project:

- Security concerns in the country continue to be a major limiting factor. Due to the conflict that occurred in Baghdad/Sadr City, training activities and delivery of test equipment have been delayed.
- Major physical rehabilitation for two sites in Baghdad/Karkh and Rasafa were changed to minor rehabilitations due to several reasons. These included the security situation and the lack of a suitable land and long lead-times required to finalize the tendering process for rehabilitation work, whereas up to 12 months has been spent between re-tendering and MOH procedures for contracting. Therefore major interventions could not be supported as no sufficient funds were available and end date of the project was approaching.
- Absence of single entity handling the activities of medical equipment management led to more efforts and time to bring all players to a common understanding in adapting policies and standards pertaining to medical equipment.
- Improved communication link between Amman and targeted stakeholders; Baghdad, Basra, Erbil and Ninewah, continued to play an important role in maintaining good coordination and regular consultations.

As for lessons learnt:

i. Utilization and management of medical equipment is a multi-phase task which requires a multi-disciplinary team from different Directorates at MoH.
ii. It is necessary to adapt national policies and standards on what constitutes good practice in medical equipment management.
iii. Successful development of medical equipment maintenance services depend on critical factors including political will and financial support. Investment in healthcare technology should be maintained and set as priority in achieving quality healthcare services.
iv. The life cycle approach to medical equipment management provides a more effective system, requiring that maintenance supervisors be taught management skills.
v. Setting a priority to train a large number of staff to maintain essential medical equipment is urgent in view of the rapid deployment of medical equipment in health institutions.
vi. Human and financial resources needs to be included in planning to assure that continuous training is provided to health professionals to assure accepted levels of technical abilities.
vii. Cooperation among medical equipment divisions/central medical equipment repair shops needs to be strengthened.

viii. There is the need for the MoH to contain the growing costs of medical equipment by establishing priorities in the selection, acquisition and management of these technologies.

**Key partnerships and collaborations**

The main counterpart for the implementation of the project is the MOH represented by biomedical equipment repair shops/sections/units of targeted locations. The partnership provides a forum through which members can combine their strengths and implement solutions that no one partner could achieve alone. The partnership supports national training programmes; management policy, and information system.

In addition, the MOH and DOH personnel continue to be fully engaged in all implementation stages so as to ensure the ownership of the project by the targeted stakeholders once the project is completed.

Moreover, the project involved the private sector in the maintenance and in the training programmes to enhance the management and capacity skills of the targeted repair shops.

**Other highlights and cross-cutting issues**

The training courses completed during the reporting period have taken into consideration the gender balance wherever possible. That said, given the technical nature of the trainings the majority of trainees were men. Out of a total of 67 participants trained, 18 or 26% were female.

The project generated direct and indirect employment; job opportunities were secured and created for four engineers, one data management specialist, one data entry and logistic assistant and 43 job opportunities have been created through subcontracting private companies for physical rehabilitation works and provision of furniture for the rehabilitated medical equipment repair shops/sections.

The technical services provided by the biomedical equipment repair shops have an impact on the quality of health care services provided to the population at targeted DOH with regards to the right to have access to safe and appropriate health technology services.

## V. Future Work Plan (if applicable)

The project was operationally closed on 28 March 2009. The final narrative report and the certified financial report are due during 2010.

## VI. Performance Indicators (optional)[5]

| | Performance Indicators | Indicator Baselines | Planned Indicator Targets | Achieved Indicator Targets | Means of Verification | Comments (if any) |
|---|---|---|---|---|---|---|
| IP Outcome 1 - Restored services of medical equipment repair shops by 100% by rehabilitating the infrastructure, providing test equipment (hardware and software) and etc | | | | | | |
| IP Output 1.1 Assessed status of medical equipment repair shops including staffing, test equipment, training and rehabilitation needs, and availability of needed spare parts. | Indicator 1.1.1 | 0 | 1 | 100% | Assessment report | |
| | Indicator 1.1.2 | 0 | 1 | 100% | List of justified needs prepared | |
| | | | | | | |
| IP Output 1.2 Completed rehabilitation of medical equipment repair shop building and furnished with tools, test equipment, and accessories needed for proper operation. | Indicator 1.2.1 | 0 | 6 | 100% | # repair shops rehabilitated (7) | Major and minor rehabilitation were done for 7 sites |
| | Indicator 1.2.2 | 0 | 1 | 100% | # of items provided | |
| | | | | | | |
| IP Outcome 2 - Improved and enhanced skills of health care technology personnel by 80% through attending international conferences, and training courses as well as national training and TOT courses. | | | | | | |
| IP Output 2.1 Providing training for 220 health care technology personnel (males & females), through national training programmes. Consequently, a series of TOT workshops can be organized to share the acquired knowledge. | Indicator 2.1.1 | 0 | 220 trained | 100% | Training report | # of personnel trained (596) – 453 male and 143 female |
| | Indicator 2.1.2 | 0 | TOT workshops conducted | 100% | Certificates of completion | |
| | | | | | | |

[5] E.g. for the UNDG Iraq Trust Fund and the MDG-F.

| | | | | | | |
|---|---|---|---|---|---|---|
| IP Output 2.2<br>Providing international training for 15 health care technology supervisors and engineers (11 males and 4 females) by attending international conferences and workshops on proper maintenance and utilization of medical equipment. | Indicator 2.2.1 | 0 | 15 | 100% | # of personnel attended (20 male and 5 female) | Achieved to send 25 staff for international short-term courses. |
| | | | | | | |
| | | | | | | |

## VII. Abbreviations and Acronyms

DOH: Department of Health

Kimadia: State company for Drugs and Medical Supplies and responsible for maintenance of equipment for whole Iraq.

MDG: Millennium Development Goals

MEM&MS: Medical Equipment Management and Maintenance System

MOH: Ministry of Health

MOU: Memorandum of Understanding

PSC: Project Steering Committee

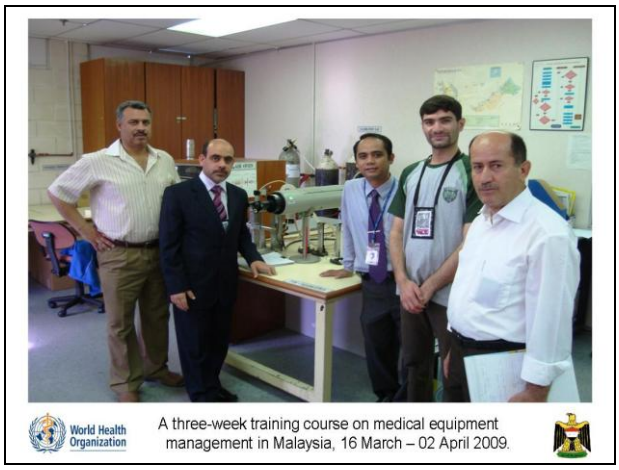
TOT: Training of Trainers

WHO: World Health Organization

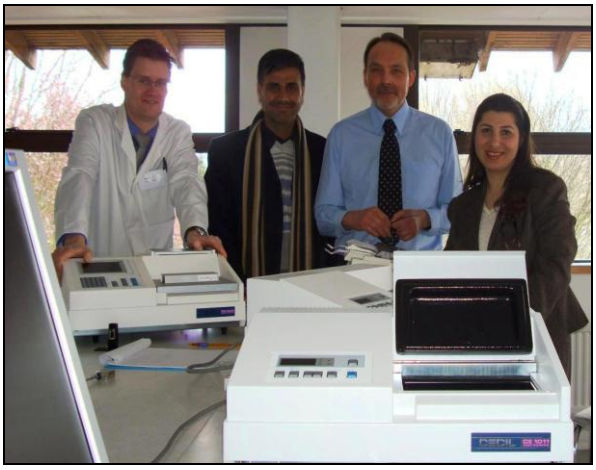
Annex 1 Data of Capacity building during the reporting period

| | Total Number of | | | | Governorate | |
|---|---|---|---|---|---|---|
| | **Courses** | **Participants** | Male | Female | **Baghdad** | **Other** |
| **Overseas training courses** | 4 | 10 | 8 | 2 | 5 | 5 |
| **Field Visit** | 1 | 10 | 5 | 5 | 5 | 5 |
| **National Service Training** | 6 | 78 | 47 | 31 | 58 | 20 |
| **Total** | | **98** | 60 | 38 | **68** | **30** |

Annex 2 Photos of short-term fellowships, overseas training courses, field visits and local trainings

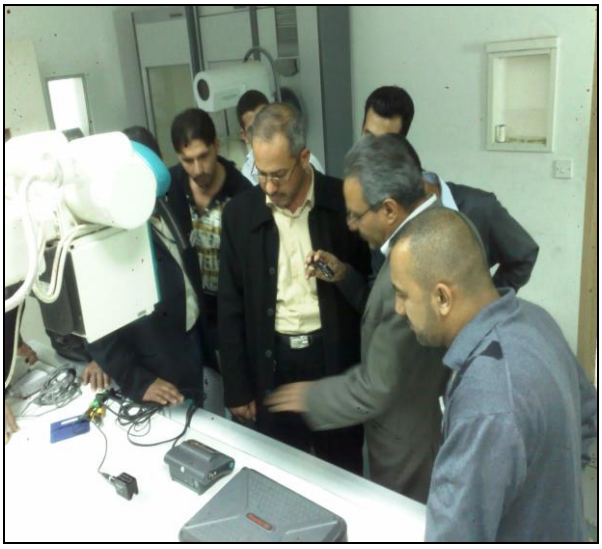



Fellowship in Malaysia



Training course in United Kingdom


Field Visit



Local Training in Baghdad